September 19, 1997

Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT - POST SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT; REVISION 1.

Pursuant to 10 CFR 50.82(a)(7), Consumers Energy Company hereby submits Revision 1 to the Post Shutdown Decommissioning Activities Report (PSDAR) for the Big Rock Point Plant. The PSDAR includes a description of the planned decommissioning activities along with a schedule for their accomplishment, an estimate of expected costs, and a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be in compliance with 10 CFR 50.82(a)(6)(ii).

By March 31, 1998, Consumers Energy Company will provide a detailed schedule and revised cost estimate with regard to decommissioning activities. The Company anticipates that the revised cost estimate will not exceed $290.1 million (1994 constant dollars).

Respectfully,

Kenneth P Powers
General Manager

CC: Administrator, Region III, USNRC
NRC Resident Inspector - Big Rock Point Plant
Project Manager, NRR.

ATTACHMENT

ATTACHMENT

CONSUMERS ENERGY COMPANY
BIG ROCK POINT PLANT
DOCKET 50-155

POST SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT; REVISION 1.

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INTRODUCTION

Under the provisions of 10 CFR 50.82(a)(7), Consumers Energy Company hereby submits Revision 1 to the Post Shutdown Decommissioning Activities Report (PSDAR) to describe planned decommissioning activities, a schedule for their accomplishment, estimate expected costs, and provide the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be in compliance with 10 CFR 50.82(a)(6)(ii).

BACKGROUND

When Consumers Energy Company's Big Rock Point Plant began operation in September 1962, it was the first commercial nuclear power plant constructed in Michigan and the fifth in the United States. The General Electric Boiling Water Reactor (BWR) was rated for 240 Megawatt (MW) Thermal, and was built by Bechtel Corporation. By letters dated June 18, 1997, and June 26, 1997, Consumers Energy Company notified the Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.82(a)(1)(i), that Big Rock Point Plant would permanently cease operation on August 30, 1997. On August 29, 1997, the reactor was permanently shutdown, ending 35 years of electric power generation as the nation's oldest and longest running nuclear plant. It was closed because its relatively small size (67MW Electric) was likely to make it too expensive to operate in an increasingly competitive environment.

Consumers Energy Company's goal is to immediately dismantle Big Rock Point Plant in a safe, environmentally conscious, and cost effective manner. This action will result in the timely removal of the existing nuclear plant in accordance with the DECON option found acceptable to the NRC in its Final Generic Environmental Impact Statement (FGEIS) [Reference 1]. Completion of this option is contingent upon continued access to one or more low level waste disposal sites. Currently, Consumers Energy Company has access to Chem Nuclear - Barnwell, South Carolina and Envirocare - South Clive, Utah.

DESCRIPTION OF PLANNED DECOMMISSIONING ACTIVITIES

Decommissioning Activities and Planning

The activities planned for decommissioning of the Big Rock Point Plant reflect the DECON option for the site. Work plans will be completed for decommissioning activities prior to commencing the activity. Figure 1 shows a summary decommissioning schedule for Big Rock Point Plant. This schedule begins with the initial announcement to permanently cease plant operations on June 11, 1997.

Figure 2 shows a preliminary timeline of the significant decommissioning activities.

Planning Activities

Subsequent to the Consumers Energy Company June 18, 1997 notification to the NRC of plans to permanently shutdown the Big Rock Point Plant, a site organization was developed to decommission the plant. This organization has become effective September 15, 1997. Revisions to the site Emergency Plan, Security Plan, Technical Specifications, Offsite Dose Calculation Manual, UFHSR and Quality Program Description are in various stages of development and will be submitted to the NRC.

Continuing planning and preparation for decommissioning includes the following generalized types of tasks:

- Review existing plant programs to assess their applicability to decommissioning,
- Review and reclassify systems important to decommissioning activities,
- Revise procedures and license basis documents to reflect the plant's permanently defueled configuration,
- Initiate radiological and hazardous material characterization of the site,
- Design and procure equipment and facilities to support decommissioning activities,
- Identify specific decommissioning activities,
- Prepare work plans for decommissioning activities,
- Prepare dose estimates for decommissioning activities,
- Evaluate disposition options for site components and structures,
- Develop a cost measurement and control mechanism, and
- Develop an activity schedule consistent with the overall schedule.

A key step in the decommissioning planning was the selection of a project staff and establishment of an organizational structure. This step mobilized site management and staff personnel augmented with on-site specialty contractors.

Plant Dismantlement

Decommissioning planning is based on selecting the DECON option and is expected to result in the complete dismantlement and restoration of the site. The facilities remaining to support dry storage of the fuel will be decontaminated and/or dismantled after the spent fuel has been received by DOE.

The following activities are anticipated to occur during the dismantlement period:

- Perform primary system decontamination,
- Establish a site construction power system,
- Remove asbestos insulation in conjunction with plant piping systems,
- Remove turbine control oil,
- Establish a spent fuel pool cooling system independent of existing plant systems,
- Construct an Independent Spent Fuel Storage Installation (ISFSI) for dry cask storage,
- Establish a monitoring location allowing for the deactivation and dismantlement of the plant control room,
- Dismantle systems, structures and components not required for the safe storage of spent fuel, including major component removal,
- Conduct decontamination of facility surfaces, components and piping surfaces as required,
- Conduct soil remediation as necessary,
- Ship and properly disposition all radioactive materials,
- Perform a comprehensive final status survey to demonstrate compliance with approved site release criteria (10 CFR 20, subpart E).

The structures and facilities remaining after plant dismantlement and site restoration will be to support the dry storage of the spent fuel.

SIGNIFICANT DECOMMISSIONING ACTIVITIES

10 CFR 50.2 defines major decommissioning activities as those that result in permanent removal of major radioactive components (e.g. reactor vessel and internals, large bore reactor coolant system piping, and other large components that are radioactive to a comparable degree), permanently modifies the structure of the containment, or results in dismantling components for shipment containing greater than class C waste.

The following discusses several planned significant decommissioning activities at Big Rock Point Plant:

Reactor Vessel

The reactor vessel was fabricated from carbon steel with an internal stainless steel cladding. The entire outside of the reactor vessel is insulated with 3-inch thick metallic insulation. It is attached to the reactor vessel by banding and is supported by brackets welded to the outside surface of the reactor vessel. The reactor vessel is supported by 12 brackets attached to the exterior vessel shell. Twenty four 2-1/2-inch diameter hanger rods attached to these brackets transfer the reactor vessel weight to supports anchored in the surrounding concrete.

During power operations neutron irradiation from the fission process generated activation products in the stainless steel vessel liner, the carbon steel vessel shell, and metallic insulation. The radionuclide inventory for the reactor vessel as a unitized package is expected to be a Type B quantity, meeting the Low Specific Activity (LSA) material criteria. As a result, the reactor vessel as a unitized package would be exempt from the requirements of 10 CFR 71.73, "Hypothetical Accident Conditions." The radionuclide content estimates will be verified with a radiation survey of the reactor vessel after the internal components have been removed. Detailed classification evaluations will be completed as a part of detailed planning for the reactor vessel removal activity.

An engineering evaluation was performed to investigate potential reactor vessel removal alternatives. The evaluation identified two technically feasible alternatives: intact vessel removal and segmented vessel removal. The intact vessel removal alternative proposes that the reactor vessel be shipped to a licensed low radioactive waste disposal facility as one piece. The segmented vessel removal option proposes shipment of reactor vessel sections to a low level radioactive waste disposal facility utilizing multiple shipments in approved shipping containers.

Currently evaluations are being conducted to determine which method will be utilized.

Steam Drum

The steam drum is part of the Nuclear Steam Supply System and is located in the reactor building. It is a 40-foot 9-inch long by 7-foot 2-inch diameter, horizontal steel cylinder with ellipsoidal heads. The steam drum contains 60 steam separators arranged in two equal rows. The steam drum's vessel wall is 4-3/8 inches thick A-212B carbon steel with 5/32" Type 304 stainless steel cladding. The nozzles are primarily ASTM A-105 Grade II carbon steel with a 5/32-inch Type-304 stainless steel clad. Nozzles smaller than 4 inches are made from SB-166 Inconel material. Internal components are made from Type 304 stainless steel.

The steam drum may be chemically decontaminated as part of the Nuclear Steam Supply System, then drained and isolated until ready for dismantlement in accordance with general decommissioning activities.

Primary Coolant System

Primary coolant system piping connects all major components of the Nuclear Steam Supply System.

The primary coolant system will be chemically decontaminated, drained and isolated until ready for dismantlement in accordance with general decommissioning activities.

Containment Vessel

The containment vessel is a 130-foot diameter, Hortonsphere steel vessel. The sphere extends 27 feet below grade and 103 feet above grade. The containment vessel is constructed of 3/4-inch (nominal) steel plates. The exterior columns are non-load carrying members which were used during construction and were unloaded after construction and testing of the containment vessel, and now remain only as attachments. The foundation of the containment vessel is a reinforced concrete cradle in the shape of an inverted spherical dome segment approximately 7 feet thick.

The containment surfaces and structures will be decontaminated and dismantled in accordance with general decommissioning activities.

Spent Fuel Pool

The Spent Fuel Pool is described in Section 9.1 of the Updated Final Hazards Summary Report (UFHSR).

Once the spent fuel pool has been emptied it will be decontaminated and dismantled in accordance with general decommissioning activities.

OTHER DECOMMISSIONING CONSIDERATIONS

The decontamination and/or dismantlement of contaminated systems, structures and components may be accomplished by decontamination in place, dismantlement and decontamination, or dismantlement and disposal. A combination of these methods may be utilized to reduce contamination levels, worker radiation exposure and project costs. General considerations applicable to these activities are described below.

Chemical Decontamination of the Primary Coolant System

A chemical decontamination of the primary coolant system will be performed prior to conducting any major decommissioning activity. The chemical decontamination is a significant ALARA initiative being performed to reduce personnel exposure during decommissioning work activities. This decontamination effort is expected to include the reactor vessel and steam drum, steam risers and recirculation piping, shutdown cooling system, and the cleanup system. The existing reactor recirculating water pumps are expected to be used to circulate the cleaning solution throughout the primary and selected interconnected systems. Modifications will be required to establish specific flow paths and isolation points. This decontamination effort is expected to be performed by a qualified contractor following approved site specific controls.

General Decommissioning Activities Relating to Removal of Radiological Components & Structures

Components will be safely and efficiently removed using the most appropriate methods for the particular circumstance. Work packages will be prepared for activities related to the dismantlement of plant systems, structures and components. Openings in components will typically be covered to prevent the spread of contamination. Components may be moved to a processing area for volume reduction and packaging into containers for shipment to a waste disposal site or a processing facility for decontamination.

Following are several general decontamination and dismantlement considerations that will be incorporated into the decommissioning work packages:

- The capability to control air flow from the reactor building, the turbine building, and the liquid radioactive waste vault to the environment through monitored pathways will be provided when activities in these areas have the potential to create airborne radioactivity release. Pressure retention capability is not required. This consideration should not preclude removal of existing penetrations or making temporary penetrations providing that the opening can be closed in a timely manner, or a net positive inflow of air can be demonstrated.

- Radioactive particulate emission will be monitored in accordance with the Offsite Dose Calculation Manual (ODCM).

- Decommissioning activities that use liquids will ensure that the contaminated liquids will be processed and sampled and monitored before release. In addition, existing or supplemental barriers should be used to ensure that inadvertent spills from these activities are contained. A program similar to the existing Spill Prevention Control and Countermeasures Pollution Incident and Prevention Plan (SPCC/PIPP) will be implemented.

- Non-radioactive hazardous materials and wastes will be dispositioned in accordance with Consumers Energy Company Waste Management Program. Typical materials handled and disposed of through this program include fuel oil, lubricating oil, 1,1,1-trichloroethane, laboratory chemicals, lead, mercury, paints, battery acid, and asbestos containing materials. Considerations include the following:

  - Materials containing asbestos (e.g. insulation) will be removed and processed in accordance with this program.

  - The decontamination and dismantlement methods to be used on systems, structures, and components which contained or were immersed in chromated solutions will be evaluated and the methods selected to minimize the potential for creating a mixed waste.

  - Instrumentation and control components will be evaluated, and the dismantlement method will be selected to minimize the potential for creating a

hazardous waste. Switching elements which contain mercury should be removed from the instrument when practicable.

- Contaminated systems, structures and components with significant external contamination, will be decontaminated to remove the loose external contamination, painted to stabilize the contamination, bagged to prohibit contamination spread, or otherwise controlled to prevent personnel or plant contamination during removal.

- Contaminated piping and tubing should be removed as follows:

  - Piping will be cut using methods which minimize the generation of airborne contamination. When appropriate, remote cutting systems may be used to maintain worker exposure ALARA.

  - Protective covers or plugs may be installed on ends of contaminated piping to confine internal contamination.

  - Piping penetrations will be cut as close as practicable to the containment vessel shell. The openings in the containment vessel will be covered or plugged once the piping is removed.

  - Underground piping identified for removal will be evaluated prior to cutting and removal to identify a method appropriate to the physical condition of the pipe.

- Contaminated supports will be removed in conjunction with the equipment removal activities.

- Systems and components may be removed from areas and buildings prior to the start of structural decontamination activities. Walls may be removed as required to permit removal of components.

- Embedded contaminated piping, conduits, ducts, plate, channels, anchors, sumps and sleeves may be removed or decontaminated during area and building structural decontamination activities.

- Centralized processing and cutting stations will be considered to facilitate packaging of components for shipment to an off-site processing facility or to a low level radioactive waste disposal facility.

- Equipment designated for asset recovery or re-use in the Consumers Energy Company system may be preserved in accordance with vendor recommendations or Consumers Energy Company practices.

Special or Unusual Programs

There are no special or unusual programs planned for use. All procedures and processes to be applied at Big Rock Point Plant are consistent with those discussed in the Final Generic Environmental Impact Statement on Decommissioning (NUREG-0586).

Low Level Radioactive Waste Removal and Handling

Low level radioactive waste will be handled in accordance with plant procedures, then shipped either to licensed offsite processors for further processing such as decontamination for free release, metal melt, incineration, or shipped for disposal at licensed facilities. No onsite incineration will be performed.

Soil Remediation

Soils, concrete rubble from demolition of structures, rubblized paving and other soil-like materials will be surveyed to determine if residual radioactivity of plant origin is present, and if so, the radioactivity concentrations present. Such soils and soil-like materials will be remediated (i.e., removed, processed and disposed of at a licensed facility) if determined to contain levels above the NRC site release guideline values of 10 CFR 20, subpart E.

Processing and Disposal Site Locations

A number of facilities are available for processing of radioactive waste materials. These facilities provide services which include, but are not limited to, decontamination, incineration, metal melt, compaction or other methods of consolidation, and disposal of low level radioactive wastes. A partial list of such facilities includes: Chem Nuclear, Barnwell, SC; Envirocare, South Clive, UT; Hake, Memphis, TN; Scientific Ecology Group, Oak Ridge, TN; US Ecology, Oak Ridge, TN.

Removal of Mixed Wastes

All applicable regulations of state and federal authorities will be followed in the handling, storage and transport of mixed wastes. Transport will only be by authorized licensed transporters and shipment will be only to licensed facilities. If technology, resources and approved processes are available to render mixed waste non-hazardous, such processes may be considered to minimize the hazards of transport and disposal of the wastes.

Spent Fuel and Greater Than Class C Waste

Spent fuel currently is planned to be stored wet in the spent fuel pool until dry transportable storage canisters are available, and fuel has decayed sufficiently to meet license conditions of the canisters. Loading of dry storage canisters is planned to begin in late 1999 or early 2000, with completion of fuel pool offload in late 2000 to early 2001, provided the canister license allows loading with three years or less of decay. Current plans call for an onsite Independent Spent Fuel Storage Installation (ISFSI) which will accommodate all current spent fuel in seven storage casks, each containing two canisters. Fuel is expected to be retained until Department of Energy (DOE) fulfills their obligation to receive the fuel.

Greater than Class C (GTCC) wastes are comprised of reactor internals exposed to many years of neutron flux. The method of disposal which would result in lowest cost and lowest dose to workers is shipment within the intact reactor vessel, provided that authorization to average the radionuclide inventory throughout the metal mass of vessel and contents (such that the total package is not GTCC). The less advantageous option would be to cut internals into dimensions suitable for storage within the dry storage canisters for transfer to DOE as GTCC waste. This option is allowed by storage canister design, but there currently is no DOE rate schedule for GTCC, or confirmation that the ultimate fuel storage facility will accept GTCC wastes.

SITE RESTORATION

During the process of dismantlement and decontamination to greenfield (DECON) status, plant materials will be surveyed to determine whether such materials:

1) are uncontaminated and may be free released,

2) retain traces of detectable radioactivity, but at levels below NRC site release criteria, in which case the materials either will a) remain on site, b) be decontaminated for free release, or c) be shipped to licensed vendor facilities for offsite processing such as metal melt, incineration, or further decontamination, or

3) retain significant levels of radioactivity, in which case these materials will be shipped to licensed facilities for processing or disposal.

A final survey to confirm that the site, (with the exception of approximately a one acre dry ISFSI), meets NRC release criteria will be performed on the greenfield site prior to application of topsoil and vegetative plantings while original soil and rubblized materials are readily accessible at and near the surface for *In Situ* gamma spectral analysis. Successful completion of the final survey will allow license termination with the site released for unrestricted use. A similar process will be performed on the ISFSI site following final shipment of fuel to DOE at a later date.

ENVIRONMENTAL IMPACTS

Big Rock Point Plant has performed a review of the site and evaluated the potential impacts of the proposed decommissioning activities. The review concludes that impacts due to decommissioning of Big Rock Point Plant will be in compliance with 10 CFR 50.82(a)(6)(ii). This conclusion is reached on the basis of the following:

- The DECON method of decommissioning currently chosen for Big Rock Point Plant, as well as the SAFSTOR option which has also been thoroughly studied for this site, are fully addressed by the FGEIS.

- There are no unique aspects of the decommissioning techniques to be utilized that would invalidate the conclusions reached in the FGEIS.

- Big Rock Point Plant is significantly smaller and contains a radioactive source term which is only on the order of 10% that of the standard BWR addressed by the FGEIS. As such, Big Rock Point Plant provides lower impacts for potential radiological accidents. However, due to Big Rock Point Plant's lack of high efficiency particulate activity (HEPA) filters in the original design of reactor building exhaust, the plant now is in the process of installing HEPA filters for use in the unlikely event potential accidents such as those addressed by the FGEIS could occur. This installation of HEPA filters brings the plant fully within the bounds of the FGEIS.

- Worker doses projected for the decommissioning of Big Rock Point Plant have been compared on a task-by-task basis with the FGEIS. Due to smaller size and lower radioactivity source term, doses are projected to be well under the 1845 person-rem identified for the reference BWR by the FGEIS.

- Doses to the public will not exceed those estimated by the FGEIS for the reference BWR.

- No site specific factors at Big Rock Point Plant would alter the conclusions of the FGEIS.

The total occupational radiation exposure expected for the decommissioning interval has been estimated at 425 person-rem. This is not a conservative estimate, but is rather a goal based on techniques of maintaining plant doses as low as reasonably achievable (ALARA) which have been demonstrated during the final years of plant operating life and at other nuclear plants in the process of decommissioning now and in the recent past. This number may be higher, for example, if full system chemical decontamination is less effective than assumed, or if reactor internals cannot be shipped in the reactor vessel with minimal handling and worker exposure. However, in no event is dose expected to exceed the value of 1845 person-rem estimate of the FGEIS.

No significant impacts are expected from the disposal of radioactive waste. Total volume of waste projected for Big Rock Point Plant decommissioning is 72,100 cubic feet, in comparison to the FGEIS volume for the reference BWR of 662,500 cubic feet, including disposable containers.

Radiation exposure due to transportation of radioactive waste will be well below (on the order of 10 to 20% based on waste volume and activity ratios) the 110 person-rem for transport workers and 10 person-rem for the public presented by the FGEIS. Number of shipments (and therefore, doses as well as accident probabilities) also will be less than 20% of that the larger reference plant, based on waste volume ratios. In addition, plant experience shows that transport vehicle dose rates seldom approach the levels assumed by the FGEIS analysis in the calculation of transport worker and public doses.

Radiation exposure to offsite individuals due to postulated accidents are bounded by the FGEIS analysis for non-fuel related events, and by EPA Protective Action Guides [Reference 3] for these, as well as fuel related events. Effluents release levels, and public dose due to effluents will decrease below the low levels observed during plant operation, due to lack of

radionuclide production with the reactor defueled, and decay of the radionuclide inventory over time.

Disposal of low level radioactive wastes at licensed disposal facilities is expected to be possible in a timely manner. However, should temporary storage be required, adequate onsite storage space is available in one or more, or a combination of the Big Rock Point Plant radioactive waste facility, the turbine and reactor buildings, and an onsite contaminated materials warehouse. No significant environmental impacts are anticipated due to temporary onsite storage. Such storage will be in compliance with all applicable federal and state regulations.

Non-radiological environmental impacts from decommissioning the Big Rock Point Plant will be minor short term increases in noise, dust and truck traffic flow in the immediate vicinity of the plant site during dismantlement. An increased risk of industrial accidents is recognized. Additional safety professionals are being added to the decommissioning staff, and safety programs are receiving added emphasis in acknowledgement of this risk. The only significant socioeconomic impacts identified are those of local job loss and lowered tax base. No detrimental impacts to local culture, terrestrial or aquatic resources have been identified. Although future uses of the plant site has not yet been determined, the property provides potential for a wide variety of beneficial uses. The chosen greenfield (DECON) option, coupled with unrestricted release compliance, will ensure that future uses are not limited by final site condition.

Figure 1

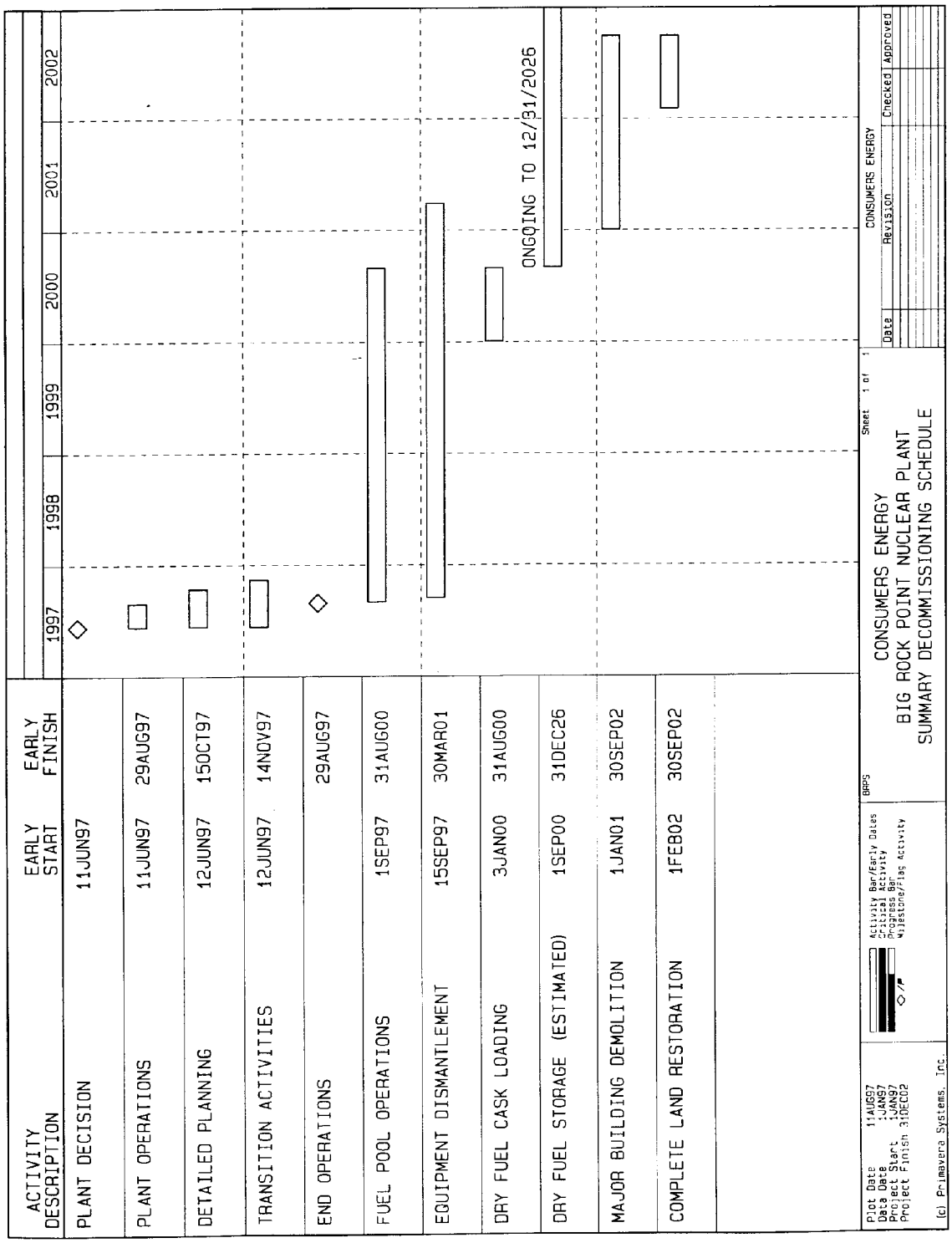
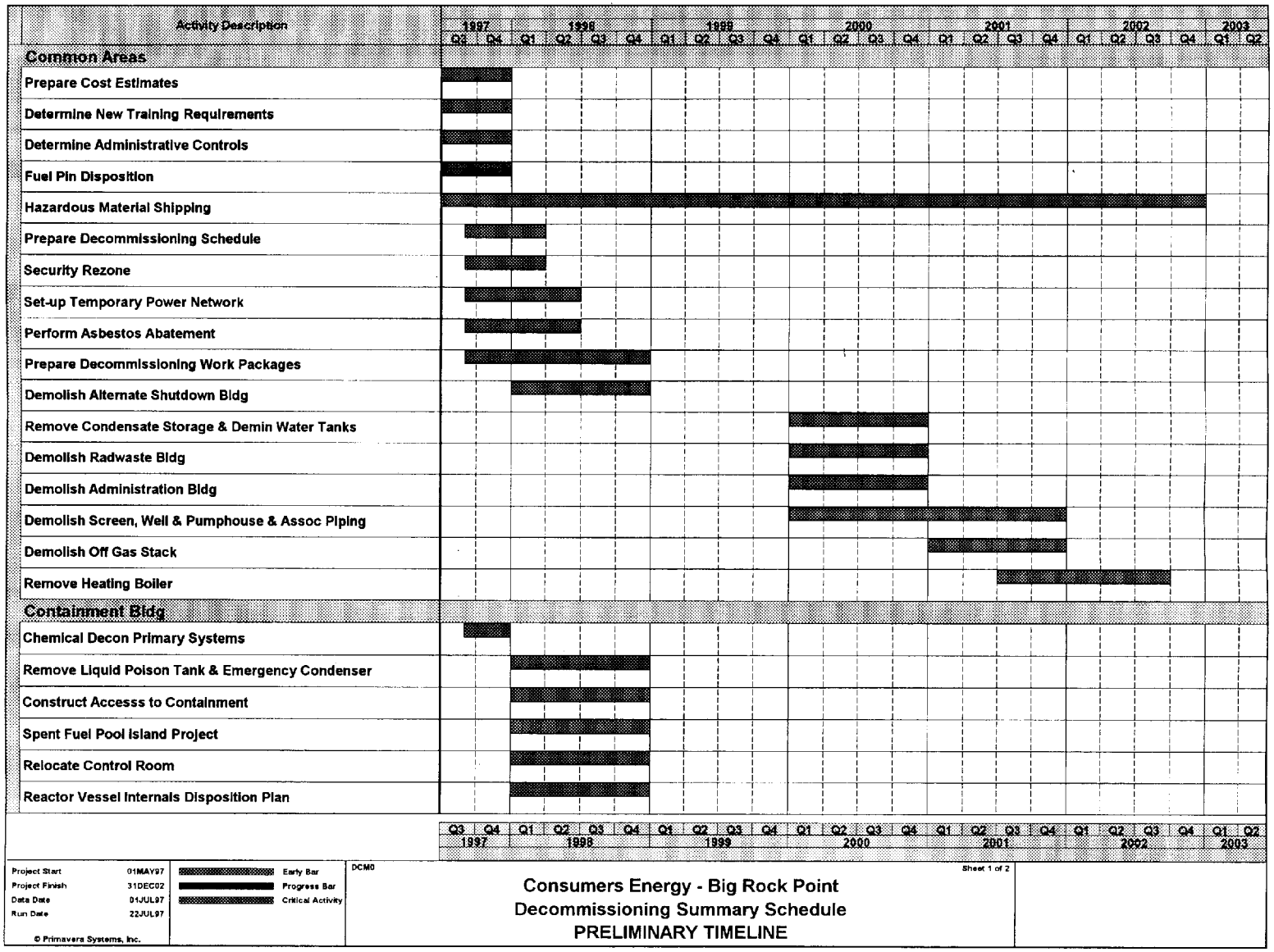

ACTIVITY DESCRIPTION
EARLY START
EARLY FINISH
1997
1998
1999
2000
2001
2002
PLANT DECISION 11JUN97
PLANT OPERATIONS 11JUN97 29AUG97
DETAILED PLANNING 12JUN97 15OCT97
TRANSITION ACTIVITIES 12JUN97 14NOV97
END OPERATIONS 29AUG97
FUEL POOL OPERATIONS 15SEP97 31AUG00
EQUIPMENT DISMANTLEMENT 15SEP97 30MAR01
DRY FUEL CASK LOADING 3JAN00 31AUG00
DRY FUEL STORAGE (ESTIMATED) 1SEP00 31DEC26
MAJOR BUILDING DEMOLITION 1JAN01 30SEP02
COMPLETE LAND RESTORATION 1FEB02 30SEP02
ONGOING TO 12/31/2026
Plot Date 11AUG97
Data Date 1JAN97
Project Start 1JAN97
Project Finish 31DEC02
Activity Bar/Early Dates
Critical Activity
Progress Bar
Milestone/Flag Activity
BRPS
CONSUMERS ENERGY
BIG ROCK POINT NUCLEAR PLANT
SUMMARY DECOMMISSIONING SCHEDULE
Sheet 1 of 1
CONSUMERS ENERGY
Date
Revision
Checked
Approved
(c) Primavera Systems, Inc.

Figure 2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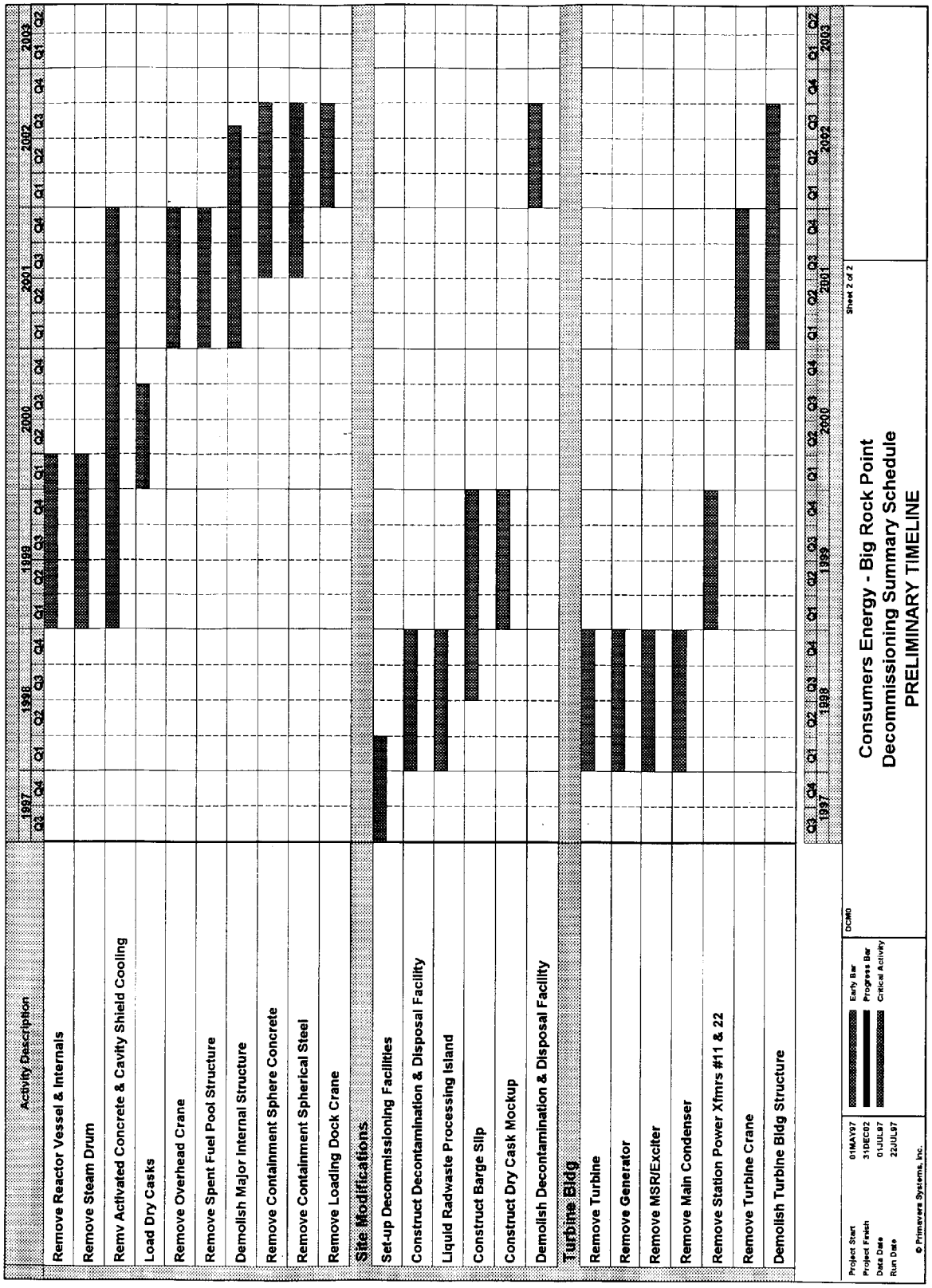
1997
1998
1999
2000
2001
2002
2003
Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2
Common Areas
Prepare Cost Estimates
Determine New Training Requirements
Determine Administrative Controls
Fuel Pin Disposition
Hazardous Material Shipping
Prepare Decommissioning Schedule
Security Rezone
Set-up Temporary Power Network
Perform Asbestos Abatement
Prepare Decommissioning Work Packages
Demolish Alternate Shutdown Bldg
Remove Condensate Storage & Demin Water Tanks
Demolish Radwaste Bldg
Demolish Administration Bldg
Demolish Screen, Well & Pumphouse & Assoc Piping
Demolish Off Gas Stack
Remove Heating Boiler
Containment Bldg
Chemical Decon Primary Systems
Remove Liquid Poison Tank & Emergency Condenser
Construct Accesss to Containment
Spent Fuel Pool Island Project
Relocate Control Room
Reactor Vessel Internals Disposition Plan
Project Start 01MAY97
Project Finish 31DEC02
Data Date 01JUL97
Run Date 22JUL97
© Primavera Systems, Inc.
Early Bar
Progress Bar
Critical Activity
DCM0
Sheet 1 of 2
Consumers Energy - Big Rock Point
Decommissioning Summary Schedule
PRELIMINARY TIMELINE

Figure 2


Activity Description
1997
1998
1999
2000
2001
2002
2003
Remove Reactor Vessel & Internals
Remove Steam Drum
Remv Activated Concrete & Cavity Shield Cooling
Load Dry Casks
Remove Overhead Crane
Remove Spent Fuel Pool Structure
Demolish Major Internal Structure
Remove Containment Sphere Concrete
Remove Containment Spherical Steel
Remove Loading Dock Crane
Site Modifications
Set-up Decommissioning Facilities
Construct Decontamination & Disposal Facility
Liquid Radwaste Processing Island
Construct Barge Slip
Construct Dry Cask Mockup
Demolish Decontamination & Disposal Facility
Turbine Bldg
Remove Turbine
Remove Generator
Remove MSR/Exciter
Remove Main Condenser
Remove Station Power Xfmrs #11 & 22
Remove Turbine Crane
Demolish Turbine Bldg Structure
Project Start 01MAY97
Project Finish 31DEC02
Data Date 01JUL97
Run Date 22JUL97
Early Bar
Progress Bar
Critical Activity
DCMD
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Consumers Energy - Big Rock Point
Decommissioning Summary Schedule
PRELIMINARY TIMELINE
Sheet 2 of 2

ESTIMATE OF EXPECTED DECOMMISSIONING COSTS

On March 1, 1995, Consumers Energy Company (Consumers Power Company) filed a site specific decommissioning cost estimate with the Michigan Public Service Commission. On April 10, 1996, the Michigan Public Service Commission issued the Decommissioning Surcharge Order authorizing Consumers Energy Company to collect $290.1 million in 1994 constant dollars. This estimate was based on a 27 year safe storage period followed by dismantlement to the "greenfield" (DECON) condition to be completed in about year 2030.

Consumers Energy Company will be updating the decommissioning cost estimate and submit the results in March 1998, to reflect the immediate dismantlement "greenfield" (DECON) option. It is anticipated that the cost update will not exceed the $290.1 million estimate.

Consumers Energy Company is currently authorized to collect approximately $25 million per year through December 2000 to decommission the Big Rock Point Plant. The Decommissioning Trust Fund market value through August 1997 was approximately $185 million. Therefore, the remaining fees to be collected through the year 2000 plus interest earned on the fund investment should insure that sufficient funds are available to decommission the Big Rock Point Plant site.

REFERENCES

1. NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities", August, 1988.

2. Consumers Energy Company, "Updated Final Hazards Summary Report (UFHSR), Big Rock Point Plant", Revision 6, October 7, 1996.

3. EPA 402-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents", May, 1992.